IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Appellants:	**Stephen J. Zack et al.**	Case:	**SEDN/198**
Serial No.:	**09/458,322**	Examiner:	**S. Huynh**
Filed:	**December 10, 1999**	Group Art Unit:	**2623**
Confirmation #:	**8722**		

Title: **METHOD AND APPARATUS FOR PROVIDING IN-BAND MESSAGING WITHIN A VIDEO ON DEMAND ENVIRONMENT**

CERTIFICATE OF MAILING OR TRANSMISSION
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or being facsimile transmitted to the USPTO, on the date indicated below.

1-18-08 Date

MAIL STOP APPEAL BRIEF-PATENTS
COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

SIR:

REPLY BRIEF

Applicants submit this Reply Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner's Answer dated November 27, 2007 in the Appeal of the above-identified application.

The Commissioner is authorized to charge any other fees due to make this filing timely and complete (including extension of time fees) to Deposit Account No. 20-0782/SEDN/198.

REMARKS

In Section 10 (response to argument) of the Examiner's answer (hereinafter, "Answer"), Examiner re-iterated the reasons for the rejection of the claims on appeal. Appellants respectfully maintain that the rejections of claims 32-44 as being unpatentable under 35 U.S.C. §103 are improper.

The Examiner stated (on page 11-12, Answer) that Mao teaches a server equipment for multiplexing television program content and auxiliary data (e.g., internet data, channel information, etc.) for providing signal broadcast to subscriber equipment using MPEG-2, while Wu teaches a server equipment for providing television program content and auxiliary data to the receiving equipment using MPEG-2. Examiner further stated that Wu teaches "multiplexing of content streams is statistically performed" and that "selectively multiplexing of formatted non-content data is on a future bandwidth availability basis that is predicted based on the multiplexing of the formatted content streams," citing page 5 of the Office Action of 11/16/2006.

The Examiner then concluded that it would have been obvious to combine Mao with Wu in order to maximize bandwidth utilization and provide cost saving and minimize disruption to the existing encoders in the field, citing Wu's col. 3, lines 59-61 (page 11-12, Answer).

No Motivation to combine Mao with Wu

Appellants respectfully disagree that maximizing bandwidth utilization and cost saving would have provided a valid motivation to combine Mao with Wu in the specific manner relevant to Appellants' claimed invention.

To properly assess whether it would have been obvious to combine Mao with Wu, one has to consider whether it would have been logical to use Wu's Opportunistic Data Processor (ODP) for multiplexing non-content data in Mao, or whether such an approach would have been contrary to the intended purpose of

Mao. As discussed below and in previous responses, Applicants submit that, given Mao's teaching, there is no logical basis for such a combination.

Wu teaches a method for providing an opportunistic data capability to an existing statistical multiplexing encoder platform by implementing a rate control scheme, in which opportunistic data is encoded by an ODP and sent to a packet multiplexer only when a global quantization level (QL) indicates that spare bandwidth is available, i.e., when the global QL is less than a threshold value (see Wu's Abstract). Data from the ODP and from different encoders having respective data sources are then multiplexed into a MPEG transport stream (see Wu, Fig. 1).

Mao teaches a broadcast digital video network in which internet HTML web page data is formatted to fit within a standard MPEG-2 data packet structure, and multiplexed with other MPEG-2 signals for transport (e.g., Mao's Abstract). Specifically, a control map containing various tables for locating broadcast and simulcast webpages is sent, along with the corresponding webpages, in a MPEG-2 stream (e.g., Mao, Fig. 5; col. 7, lines 36-40).

For the combination of Mao and Wu to be relevant to Appellants' claimed invention, the non-content data in Mao would have to be multiplexed and sent on an opportunistic basis using Wu's ODP. That is, the control map tables in Mao would be sent only if there is available bandwidth.

For reasons set forth below, Appellants submit that this modified approach is directly contrary to what is required or taught in Mao.

In Mao, a control map containing three tables is needed to allow a viewer to navigate among the broadcast and simulcast HTML pages (e.g., Mao, col. 3, lines 42-59). Mao teaches that:

> "[o]nce the headend 10 has all the information necessary relating to simulcast and broadcast Web pages, computer 32 generates the control map, the HTML pages and the URLs for insertion into the industry standard transport layer of the MPEG-2 protocol" (col. 6, lines 60-65).

As shown in Mao's Fig. 5, a MPEG-2 data stream 510 contains both the non-content data (control map tables HPAT, HPMT and HEIT) and the associated content data of the broadcast and simulcast HTML pages 517, 523. The master control map HPAT, which defines the locations of two other tables HPMT and HEIT, is provided at a predetermined MPEG-2 location (e.g., col. 7, lines 41-43; col. 3, lines 63-65). Once the HPAT is found by a settop box, the other two tables can be located and used to find the desired broadcast or simulcast Web pages.

Given the important role of these non-content data -- namely, to enable access to the broadcast or simulcast content, it would not have been obvious or logical to multiplex these tables on an opportunistic basis such as that taught by Wu, or based on future bandwidth availability.

Thus, Applicants submit that there is no motivation to combine Mao with Wu in the manner suggested by the Examiner.

Combining Mao, Wu and O'Loughlin will not result in Appellants' invention

Regarding the issue of whether Wu teaches "selectively multiplexing of formatted non-content data is on a future bandwidth availability basis that is predicted based on the multiplexing of the formatted content streams," the Examiner stated (on page 13 of the Answer) that "Wu must calculate, determine, forecast, or predict the bandwidth condition will be like in the future and multiplex data with respect to that prediction (e.g., bandwidth available for opportunistic data and used the bandwidth available/spare for the opportunistic data)." Appellants respectfully disagree.

Wu teaches that:

"the ODP 162 "tricks" the QLP 130 into assigning it bandwidth only when the ODP 160 determines that excess (spare) bandwidth that is not being used by the TSPs is available" (col. 6, lines 20-23), and

"[i]f the global QL value drops below the threshold (e.g., QL<5), this means there is spare bandwidth available for the opportunistic data, and the ODP 160 will send a non-zero max_br value to the QLP

130 so that the opportunistic data bandwidth will be upper bounded by max_br" (col. 7, lines 3-7).

Thus, all that Wu teaches is that the opportunistic data processor (ODP) requests bandwidth assignment from the quantization level processor (QLP) based on the ODP's determination of the current bandwidth availability as indicated by the current global QL value. Wu does not calculate or predict the future bandwidth condition and multiplex data based on that prediction.

Furthermore, even if one were to assume that a future bandwidth was calculated or predicted based on the global QL, there is no specific teaching or suggestion in Wu that such a prediction is based on the multiplexing of formatted content streams.

Appellants further submit that there is no teaching or suggestion in Wu regarding "selectively multiplexing of formatted non-content data on a future bandwidth availability basis" (emphases added.)

For example, Wu teaches (e.g., col. 1, lines 45- 56) that the opportunistic data may include any type of data, such as "side information for updating software at subscriber terminal in a television network, bank transaction data, Internet web page (Hypertext Markup Language - HTML) data, Java(R) applet data," and so on.

In other words, Wu does not distinguish between content or non-content data for selective multiplexing on an opportunistic basis. Instead, Wu specifically teaches that any type of data, i.e., content or non-content, may be multiplexed opportunistically, as long as there is available bandwidth.

As such, there is no teaching or suggestion in Wu for selectively multiplexing of formatted non-content data, because Wu does not specifically select non-content data for processing by the ODP.

Therefore, the combined teaching of Mao and Wu does not teach "predicting future bandwidth availability based on the statistical multiplexing of the formatted content streams; and selectively multiplexing formatted non-

content data into said output stream on a future bandwidth availability basis," as provided in Appellants' claims 32 and 40.

As noted by the Examiner (page 6, Answer), Mao in view of Wu does not specifically disclose "a transport processor coupled to a multiplexer switch for transmitting to the multiplexer switch reverse data channel information received via a reverse data channel."

However, Appellants disagree that the transport processor of O'Loughlin, when combined with Mao and Wu, would have resulted in the specific configuration in Appellants' claimed invention.

The cited portions of O'Loughlin (e.g., Fig. 1; col. 6, line 52 - col. 9, line 54) disclose a data transportation environment in which consumers are connected, directly or indirectly, to respective bidirectional converters (multiplexers) 18, 24 or 26, which are in turn connected to data transport system 12 (see O'Loughlin, Fig. 1).

If Mao's multiplex switch (e.g., Mao, Fig. 1, MPEG REMUX 14) were to be modified in the manner taught by O'Loughlin, i.e., connecting the multiplex switch and transport processor as shown in O'Loughlin's data transport system 12 and multiplexers 18, 24 and 26, one would arrive at a system configuration that is different from Appellants' claimed invention.

For example, Appellants' server equipment provides data to subscriber equipment, with the multiplex switch and transport processor coupled such that the multiplexed output is received by the transport processor for transport to subscriber equipment. This corresponds to the claimed features:

> "multiplex switch for multiplexing a plurality of formatted content data from server modules to produce an output stream that is adapted for transport to the subscriber equipment via a communication channel" (see claim 32, emphasis added); and
>
> "statistically multiplexing a plurality of formatted content streams to produce an output stream that is adapted for transport to the subscriber via a communication channel" (see claim 40, emphasis added).

By contrast, the multiplexed data in O'Loughlin is actually information from the consumer equipment being provided to the data transport system 12 (O'Loughlin's Fig. 1). Thus, unlike Appellants' invention, the multiplexed output as modified according to O'Loughlin, would have been provided in a direction opposite to that of Appellants' invention (i.e., from the subscribers, instead of to the subscribers).

Furthermore, the transport processor of the claimed invention is configured such that the reverse data channel information, i.e., information from the subscribers, is received by the transport processor for transmitting to the multiplex switch. This is illustrated in Appellants' FIG. 1 and p. 5, lines 17- 21 of the specification.

Again, O'Loughlin's Fig. 1 teaches that information from the subscribers is sent by the multiplexers 18, 24 and 26 to the data transport system 12.

Thus, if Mao were to be combined with O'Loughlin's teaching, one would have resulted in reverse data channel from subscribers being received by the multiplexer for transmitting to the transport processor, which is opposite to Appellants' claimed invention.

Therefore, even if O'Loughlin were to be combined with Mao and Wu, one would still not have resulted in Appellants' invention, as recited in either claim 32 or 40.

Thus, Mao, Wu and O'Loughlin, singly or in combination, fail to teach or suggest the invention as a whole. As such, Appellants submit that independent claims 32 and 40 are not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder.

Summary

Appellants submit that, since Mao teaches that the non-content data (e.g., control maps) be provided in the same data stream as the content data, and that the master control map be provided in a predetermined packet, Mao effectively teaches away from opportunistic multiplexing of these non-content data. Thus, one skilled in the art, understanding the intended purpose of Mao's method, would not have found it obvious to modify Mao by incorporating Wu's opportunistic processor for multiplexing non-content data.

In addition, the combined teaching of Mao and Wu would not have resulted in selectively multiplexing formatted non-content data on a future bandwidth availability basis because Wu does not distinguish between the type of data, i.e., content vs. non-content data, for selectively multiplexing by the opportunistic data processor.

Furthermore, even if combined with Mao and Wu, O'Loughlin's configuration of a transport processor and multiplexer would still not have resulted in the specific configuration of Appellants' claimed invention, e.g., providing multiplexed output streams to the subscriber equipment.

Finally, Appellants agree that the individual components used for implementing Appellants' method are known, and they do function according to physical principles, as all physical objects should.

However, a technological invention involving a new or unknown, configuration -- i.e., arrangement that has not been used or attempted by others, such as Appellants' claimed invention, should be properly assessed for inventiveness in terms of:

1) whether the proposed combination of Mao and Wu, would have been logical in view of the context of Mao's teaching; and

2) whether the proposed selection of specific components from Mao, Wu and O'Loughlin for use in combination to arrive at Appellants' specific configuration, is a result of hindsight based on Appellants' disclosure.

As discussed above, Appellants submit that it would not have been logical, given Mao's teaching, to modify Mao with Wu opportunistic data processor.

Appellants further submit that, even if Mao, Wu and O'Loughlin were combined, there are certainly many ways of selecting different components and/or implementing different configurations to achieve the goals of maximizing bandwidth, providing cost saving or minimizing disruption to existing encoders (cited by the Examiner as providing a motivation to combine Mao and Wu).

Since there is no showing or argument as to why achieving these goals would logically lead to the specific configuration of components found in Appellants' claimed invention, Appellants submit that the proposed combination is a result of hindsight based on Appellants' disclosure.

For these and other reasons set forth in the Appeal Brief dated October 2, 2007, Appellants maintain that claims 32-44 are not obvious in view of the combined teaching of Mao, Wu and O'Loughlin.

Conclusion

Applicants respectfully request that the Board reverse the rejections and pass the claims to allowance.

Respectfully submitted,

Dated: 1/11/08

Eamon J. Wall
Registration No. 39,414
Patterson & Sheridan, L.L.P.
595 Shrewsbury Ave. Suite 100
Shrewsbury, NJ 07702
Telephone: (732) 530-9404
Facsimile: (732) 530-9808
Attorney for Applicants